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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,291	01/22/2002	David Silagy	ATOCM-244	4767
23599	7590	04/26/2004	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			ZACHARIA, RAMSEY E	
			ART UNIT	PAPER NUMBER
			1773	

DATE MAILED: 04/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,291

Applicant(s)

SILAGY ET AL.

Examiner

Ramsey Zacharia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13 and 15-47 is/are pending in the application.
- 4a) Of the above claim(s) 35 and 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-11, 13, 17-21, 23, 24, 27-34, 37, 38 and 40-47 is/are rejected.
- 7) ☒ Claim(s) 2, 15, 16, 22, 25, 26 and 39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/16/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

2. Claims 35 and 36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the response filed 29 July 2003.

Inventorship

3. In view of the papers filed 22 September 2003, it has been found that this nonprovisional application, as filed, through error and without deceptive intent, improperly set forth the inventorship, and accordingly, this application has been corrected in compliance with 37 CFR 1.48(a). The inventorship of this application has been changed by adding José Teixeira Pires.

The application will be forwarded to the Office of Initial Patent Examination (OIPE) for issuance of a corrected filing receipt, and correction of the file jacket and PTO PALM data to reflect the inventorship as corrected.

Claim Objections

4. Claim 40 is objected to because of the following informalities: the term "(B)4" at the end of the claim should be --(B4)--. Appropriate correction is required.
5. Claim 44 is objected to because of the following informalities: the term --or-- appears to have been omitted after "excess of diamine" on line 3 of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 41 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection. Claim 41 recites that layer (B2) is formed of polyamide(s) with optional components, but does not require the polyamide to have amine end groups. However, in the instant specification, the polyamide(s) of layer (B2) are required to have amine end groups (see page 10, lines 17-19).

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8. Claims 43 and 46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 43 recites that layer (A12) comprises 0-50 wt% of (A11) and 50-100 wt% of (A112). This is indefinite because (A11) is a layer and not a polymer.

10. Claim 46 is renders indefinite because it is unclear whether or not layer (B4) is an optional layer. On line 7 of the claim layer (B4) appears to be required while on the last line of the claim it appears to be optional.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 40 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Roeber et al. (U.S. Patent 5,858,492).

Roeber et al. teach a composite material comprising: (I) a layer of polyvinylidene fluoride, (II) a layer comprising a polyamide, (III) a layer of a coupling agent having reactive groups, and (IV) a layer that may be a polyolefin or identical to layer III (column 2, lines 1-13). The polyamides of layer (II) preferably contain amino end groups (column 5, lines 22-28). Suitable coupling agents include a maleic anhydride modified polyethylene, a maleic anhydride modified copolymer of ethylene and propylene (i.e. a polypropylene grafted with the anhydride)

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(column 8, line 53-column 9, line 8). A polyamide layer may be inserted between layers (II) and (III) (column 5, lines 50-56). Layer (I) corresponds to instant layer (A1).

For instant claim 40, when layer (IV) is identical to layer (III), then layers (III) and (VI) correspond to instant layer (B3) and layer (II) corresponds to instant layer (B2).

For instant claim 41, the polyamide layer inserted between layers (II) and (III) corresponds to layer (B2) and layer (III) corresponds to layer (B3). Alternatively, layer (II) may correspond to layer (B2) since the disclosed polyglutarimide reads on a filler.

Claim Rejections - 35 USC § 103

13. Claims 1, 3-11, 13, 17-20, 23, 24, 27-34, 37, 38, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roeber et al. (U.S. Patent 5,858,492).

Roeber et al. teach a composite material comprising: (I) a layer of polyvinylidene fluoride, (II) a layer comprising a polyamide, (III) a layer of a coupling agent having reactive groups, and (IV) a layer comprising a polyolefin (column 2, lines 1-13). Layer (II) corresponds to instant layer (B2), and layer (III) corresponds to instant layer (B3). In addition to the polyvinylidene fluoride, layer (I) can also contain polymers based on polyvinylidene fluoride (column 2, lines 23-25). Suitable polyamides include 6-polyamide, 12-polyamide, and 6,6-polyamide (column 2, lines 30-42). The polyamides also preferably contain amino end groups (column 5, lines 22-28). Suitable coupling agents include a maleic anhydride modified polyethylene, a maleic anhydride modified copolymer of ethylene and propylene (i.e. a polypropylene grafted with the anhydride) (column 8, line 53-column 9, line 8). The coupling agent material may also contain impact-modifying rubbers, such as EPM or EPDM (column 5,

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lines 4-6). The composite may be formed by coextrusion or pressing, i.e. lamination of preformed films (column 1, lines 58-59). The composite may also contain customary additives (column 5, lines 34-40). In the embodiments of Examples 6-8, layer (I) has a thickness of 100-200 μm , layer (III) has a thickness of 100 μm , and layer (IV) has a thickness of 600-700 μm (Table 3).

Regarding claim 4, the limitations of this claim are met because the claim further limits optional polymers (A112) and (B112) but does not require that polymers (A112) and (B112) be present.

Regarding claim 27, the limitations of this claim are met because the claim further limits optional polymer (A112) but does not require that polymer (A112) be present.

Regarding claim 8 and 38, the maleic anhydride modified polymer of propylene reads on the recited blend since the "blend" may be 100% of the second component.

The (IV) layer is a polyolefin, such as polypropylene (column 4, lines 61-62). This layer reads on the polyolefin layer (B4) of claim 9 and 13. Furthermore, since layer (B4) is an optional layer, it also reads on the limitations of claims 10, 11, 33, and 34 with the (IV) layer acting as the substrate.

Regarding claim 28, the composite, since it is formed by co-extruding pressing preformed layers together at an elevated temperature (see column 9, lines 20-37), will intrinsically be anisotropic as a result of the internal stresses imposed on the material by the manufacturing process.

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Regarding claim 37, Roeber et al. discloses an embodiment where additional layers are disposed on layer (IV) opposite layers (I), (II), and (III) (see arrangement No. 3 in Table 1). These addition layers read on the substrate of instant claim 37.

Regarding claim 44, the limitations of this claim are taken directed to the process by which the polyamide is formed and not the polyamide itself. The polyamide itself is still a polyamide with amine end groups, a polyamide that is taught by Roeber et al. Since the determination of patentability for a product claim is based on the product itself and not on the method of production, Roeber et al. meets the limitations of claim 44 unless the applicants can conclusively demonstrate that the polyamide of claim 44 differs in kind from that of Roeber et al. See MPEP § 2113.

Roeber et al. do not teach the presence of an ink layer on the outside of their composite.

However, since the composite is designed for storing or transporting fuels, fluids, water, etc. (column 7, lines 21-34), it would be obvious to one skilled in the art to print on the external surface of the composite as a means of indicating the contents of the tank, supply line, etc. This printed layer reads on layer (A2) while the layer of polyvinylidene fluoride (I) reads on layer (B1).

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14. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roeber et al. (U.S. Patent 5,858,492) in view of the Encyclopedia of Polymer Science and Engineering (Volume 1: Additives).

Roeber et al. teach all the limitations of claim 21, as outlined above, except for the presence of an antioxidant or UV absorber. However, Roeber et al. explicitly teach that customary additives may be added to the compositions of the layers (column 5, lines 34-40).

The Encyclopedia of Polymer Science and Engineering discloses that antioxidants are known additives to be incorporated into polymer systems to reduce deterioration related to autoxidation (page 472).

One of ordinary skill in the art would be motivated to add antioxidants to composite material of Roeber et al. to reduce deterioration related to autoxidation of the resulting material.

15. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roeber et al. (U.S. Patent 5,858,492) in view of Koblitz et al. (U.S. Patent 3,253,060).

Roeber et al. teach all the limitations of claim 42, as outlined above, except for the use of a blend of a fluoropolymer and an alkyl (meth)acrylate polymer in place of the polyvinylidene fluoride.

Koblitz et al. teach that the molding properties of polyvinylidene fluoride are improved by blending a minor amount of polymethylmethacrylate with the polyvinylidene fluoride (column 1, line 6-column 2, line 42). The blend has a lower melt viscosity that permits a marked decrease in the molding temperature.

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One of ordinary skill in the art would be motivated to blend polymethylmethacrylate with the polyvinylidene fluoride of Roeber et al. to improve the molding properties and lower the molding temperature, thus reducing energy costs associated with production of the composite.

16. Claims 45 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roeber et al. (U.S. Patent 5,858,492) in view of Fukushi et al. (U.S. Patent 5,658,670).

Roeber et al. teach all the limitations of claims 45 and 47, as outlined above, except for the use of a polyamide in which all the end groups are amines.

Fukushi et al. teach a method for improving the adhesion between a layer comprising a fluoropolymer, such as polyvinylidene fluoride, and a layer comprising a non-fluorinated polymer, such as polyamide (column 1, lines 13-19). The method comprises mixing a di- or polyamine into the non-fluorinated polymer layer prior to bringing the two layers together (column 2, lines 40-65).

One of ordinary skill in the art would be motivated to add a di- or polyamine to the polyamide layer (II) of Roeber et al. to improve the adhesion of this layer to polyvinylidene fluoride layer (I).

Polyamides are formed through the condensation reaction of amino-acids or diacids and diamines. In either case, the end groups of polyamides are either unreacted amine groups or unreacted acid groups. A di- or polyamine mixed into a polyamide will be expected to react with any unreacted acid groups. Therefore, the resulting polyamide will have amine end groups either from the end groups of the original reactants or as a result of one amine in the di- or polyamine reacting with the unreacted acid groups.

Allowable Subject Matter

17. Claims 43 and 46 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

18. Claims 2, 15, 16, 22, 25, 26, and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter.

The inventions of claims 2, 15, 22, 25, 26, and 46 are directed to thermoforming multilayer films having one or more layers comprising a fluoropolymer, an alkyl(meth)acrylate, or a blend thereof applied over the ink layer.

Roeber et al. represent the closest prior art. However, Roeber et al. do not teach or fairly suggest an embodiment in which one or more layers are applied over an ink layer as claimed.

The inventions of claims 16 and 39 are directed to thermoforming multilayer films as claimed in which the functionalized polyolefin of layer (B3) to be a blend comprising 10-40 wt% of an ethylene polymer and 60-90 wt% of a polymer from the recited group wherein the blend is grafted with an unsaturated carboxylic anhydride.

Roeber et al. represent the closest prior art. However, Roeber et al. do not teach or fairly suggest using such a blend as the material for the coupling agent having reactive groups of layer (III).

The invention of claim 43 is directed to a thermoforming multilayer film comprising layers (A1), (B2), and (B3). Layer (A1) comprises two layers (A11) and (A12), wherein (A11)

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comprises a blend of a fluoropolymer and a polymer consisting essentially of alkyl(meth)acrylate units and (A12) comprises the same alkyl(meth)acrylate with 0-50 wt% of the same fluoropolymer as layer (A11).

Roeber et al. represent the closest prior art. However, Roeber et al. do not teach or fairly suggest a composite having a layer of an alkyl(meth)acrylate with 0-50 wt% of a fluoropolymer between their outer layer fluoropolymer and their polyamide layer.

Response to Arguments

20. Applicant's arguments filed 16 January 2004 have been fully considered but they are not persuasive.

Regarding claim 40, the applicants argue that the polyolefin layer is required by Roeber et al. but is specifically excluded from the invention of claim 40.

This is not persuasive because, while Roeber et al. require layer (IV), this layer is not required to be a polyolefin. Roeber et al. explicitly teach that this layer may be identical to layer (III). In this embodiment layers (III) and (IV) would actually be a single layer composed of the material (III), e.g. anhydride modified polyolefin. Alternatively, viewing the layers separately, layer (IV) would still not comprise a polyolefin but rather an anhydride modified polyolefin.

Claims 41 and 42 have been address with a new grounds of rejection.

Regarding the addition of an ink layer, the applicants argue that they have found that multilayer films having an outer layer made of fluoropolymer or acrylic polymer or blends thereof can be easily decorated.

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However, this does not appear to be novel since one of the problems in the prior art that Roeber et al. look to solve is problems related to unsatisfactory paintability (see column 1, lines 43-48).

The applicant argues that Roeber et al. do not teach that their polyamide having amine end groups should produce via a chemical reaction a covalent bond with the anhydride layer. The applicants further note that the synthesis of the polyamide must be conducted in the presence of diamine or when lactams or α -amino carboxylic acids are used, to use a diamine or monoamine as a chain limiter.

This is not persuasive because Roeber et al. teach that their polyamide should have amine end groups. The process by which the polyamides having amine end groups are formed is a product-by-process type of limitation. Since the determination of patentability for a product claim is based on the product itself and not on the method of production, the polyamide having amine end groups of Roeber et al. meets the limitations of the instant claims. See MPEP § 2113. Moreover, Roeber et al. appears to recognize the interaction and reaction between the amine end groups of the polyamide layer and the acid anhydride groups of the functionalized polyolefin layer (see column 5, lines 22-28). If, as argued by the applicants,

"the synthesis of polyamides [with amine end groups that produce via a chemical reaction a covalent bond which is stable over time with the anhydride layer] must be conducted in the presence of diamines or when lactams or α -amino carboxylic acids are used, to use a diamine or a monoamine as a chain limiter" (see page 13, lines 15-21 of the response filed 16 January 2004),

then the polyamide of Roeber et al. would appear to have inherently been formed in this manner since it has amine end groups that react with the anhydride groups in the functional polyolefin layer.

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Regarding the combination of Roeber et al. and Fukushi et al., the applicants argue that there is no motivation for this combination since the Roeber et al. patent is directed to construction materials and there would be no motivation to modify a structural material that is already satisfactory for its intended use.

This is not persuasive because there is explicit motivation to combine the references. Fukushi et al. teach that the inclusion of diamines into a polyamide layer improve its adhesion to fluoropolymers, such as polyvinylidene fluoride. That the composite of Roeber et al. is satisfactory for its intended use without modification does not mean that one skilled in the art would have no motivation to improve the composite. This is the underlying principle of 35 U.S.C. 103(a).

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau, can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'RZC', is positioned above the printed name.

Ramsey Zacharia
Primary Examiner
Tech Center 1700